

The Economic Value of a GED: Data from Utah

A Department of Workforce Services Research Brief

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This research brief outlines the results of an analysis of conducted by the Utah Department of Workforce Services for the Utah State Office of Education on the economic value of a GED.¹ Specifically, this research sought to determine if GED recipients gained an increase in their average annual wages.

Summary

- ❑ Economic theory suggests that obtaining additional educational credentials boosts earnings powers. Recent national research points to a lack of additional wage power attributed to a GED.
- ❑ Using Utah wage and GED records it appears that GED credentials do not in themselves create substantial increases, on average, in an individual's average annual earnings.
- ❑ Due to a number of data limitations and the lack of an appropriate control group it is impossible to conduct a proper statistical study with Utah data.
- ❑ Utah GED, post-secondary, and higher education records appear to show that individuals who have wages reported in the state and took the GED show a strong propensity to at least enter post-secondary education. In this regard the GED may show its greatest value as a bridge to moving individuals further along the educational spectrum to credentials that do realize increased wages.

Historical Background and Theoretical Underpinning

The General Education Development (GED) test has been administered in the United States since 1943. Upon successfully passing the five sub-tests—which assess the candidate's proficiency in English language arts (reading/writing), social studies, science, and mathematics—the test taker is granted a GED credential that is the equivalent to a high school diploma. As such, the GED has been touted as the second chance certification for the nation's high school dropouts. Indeed, it would appear that many people have availed themselves of this opportunity. Since 1943 more than 16 million people in the United States have taken and passed the GED test.²

The rapid rise in the number of GED test takers has also brought its value into question. In 2001 roughly 18 percent of all high school credentials were produced through GED certification (a number that fell markedly in subsequent years due to the introduction of a newly formulated GED test battery in 2002). Many labor economists have pointed to this rise with alarm, noting that existing longitudinal data sources suggest that those who hold

¹ The author wishes to extend special thanks to Murray Meszaros of the Utah State Office of Education for providing valuable secondary and post-secondary data. Any errors are solely the responsibility of the author.

² GED Statistical Report 2006, ACE, pg xi.

a GED—and go on to get no other education, a very important qualification—do no better in terms of wages than high school dropouts. Thus, it is an important public policy question to clarify the benefits of the GED, as it is clear more and more individuals are choosing this route to high school completion.

Murnane, Willett, and Boudett (1995) find that while those who obtain a GED do indeed fair less well than those who gain a regular high school diploma, they do appear to realize faster wage growth than high school dropouts. Their analysis of the National Longitudinal Survey of Youth (NLSY) allows them to create a particularly detailed model to examine the impact of a number of variables on wages. However, their most important finding is perhaps the most difficult for them to pin down. That is, while they do find some positive effects they realize that it is likely that this may be due to the fact that the individuals are translating their GEDs into further training or into a new job and thus the increase in wages is due to their new situation and not necessarily the GED. Those people who gain a GED and remain in the status quo may not see any benefit in their newly won credential. Another salient point the authors make is that in-of-itself the “acquisition of the GED credential is not a powerful strategy for escaping poverty.”

Heckman and LaFontaine (2006)—responding in part to some criticisms raised by Murnane, Willett, and Boudett and others—argue that wages of those with GED credentials don’t perform any different than high school dropouts when one accounts for inherent abilities. In their model, which also uses NLSY data, the addition of a variable to account for cognitive ability—the score from the Armed Services Vocational Aptitude Battery (ASVAB)—removed the GED wage effect for males. For females, the effect remained slightly positive, but statistically insignificant. Heckman and LaFontaine also show how previous studies that used the Current Population Statistics survey to investigate the wage differences between GED and high school dropouts were fatally flawed due to a subtle data error that attributes wages of people with higher levels of education to people with GEDs. This match bias error was introduced by a Census Bureau imputation technique used to fill in missing wage information. When this data is reimputed the wage bonus for GED holders disappears. In their paper the authors argue that in the final analysis, it is cognitive ability that is the likely factor that is behind the observed wage performance of each individual. From their analysis, only a small number of those people who gain a GED finish two or four year institutions of higher education.

Research Background

The Utah State Office of Education (USOE) requested the Department of Workforce Services (DWS) to research if individuals who had taken the GED had shown improved wage performance due to their taking the GED. To facilitate this research USOE provided DWS with social security numbers, test dates and scores, and if that individual had attended an institute of post-secondary education in the state between 1998 and the present for individuals from 1980 to 2006. This amounted to some 118,933 records. DWS, as the repository of the state’s unemployment insurance records, has easy access to the wage information of individuals who work in the state. Thus, it was assumed that by matching these records it would be easy to make some conclusions on the pre- and post-

GED performance of individuals. However, a number of forces conspired to fatally flaw this rather simple analysis.

The most important shortcoming of this analysis is the lack of a proper control group. Neither DWS nor USOE maintains a database of individuals who are high school dropouts. Thus, it is impossible to truly judge the performance of GED recipients. There are the individuals who did not pass the GED test in the data set, but they are not necessarily the best control group. There may be dropouts doing well in the labor market and who do not feel the need to get a GED, thus they should be the control group, not those who needed the GED and failed to gain it. It might also be that those who failed the GED were not emotionally prepared for the test and thus are equally emotionally unprepared to be fully attached to the labor market. A proper control group is fundamental to all good social science research and its lack hurts this analysis greatly.

Another difficulty facing this analysis is the lack of data. Unfortunately, DWS only has unemployment insurance wage information for individuals from 2001 onwards. This dearth of information makes longitudinal analysis extremely difficult. This is especially disheartening given that USOE was able to provide testing information from 1980 onwards. If wage data from that time had been available a much more interesting picture could be painted. However, the lack of other important characteristics data—such simple things such as gender and race—also hamper attempts to untangle the GED story.

Given these difficulties, it was decided to go ahead and match records of those individuals who took the GED test between 2001 and 2006 and examine the wage performance of individuals by the year they took the test grouped by their test score and age cohorts. The reasons for this design were deliberately made very simple. First, the sample was limited to those who took the test in those years due to the fact that those were the only years that wage data was available. Looking at individuals who had taken the GED twenty years previous and then looking at their wages in the present left too many possibilities for outside factors to influence wage performance. Second, since fundamental labor economic theory posits that wages are a function of not only an individual's human capital—the GED, in this case—but also their work experience—which is highly correlated to their age and is anchored in time to when their attachment to the labor market begins—to isolate the effect of the GED we must look at individuals by the year in which they took the test. (It would, of course, be possible to put all the observations together and run a single regression model, but given the lack of other explanatory variables our model would be woefully underspecified.) The further division by test score—where 450 is the score necessary to pass the GED test—is used to examine the view put forward by Heckman and LaFontaine that inherent cognitive ability is a strong driver of wage performance.

Findings

Before delving into the specific findings of this analysis it is important to make several points very clear. First, it is impossible, given all the limitations at hand, to make cause and effect conclusions about the effect of the GED with Utah data. What follows is

simply observational in nature and can be considered in the realm of assumption, nothing more. Second, this analysis only deals with working individuals. Since the population under analysis has been limited, the findings below should not be generalized to the entire population of GED exam candidates. To provide context, comparisons between the population under analysis and the general GED test population have been presented when possible. With those considerations noted, looking at the raw data does reveal some interesting trends. For the sake of brevity we will only touch on the case of the 2001 test cohort as that group has the most post-test wage data.

As can be seen in Table 1 and Figures 1 through 5, wages for all age and score groups appear to show upward movement between 2001 and 2006. This is in keeping with labor economic theory that states that wages are intimately related to work experience. With time, individuals become more productive as they “learn-by-doing” (a key component of Robert Lucas’ theory on the increasing returns to embodied human capital) on the job and command higher wages to thanks to their higher marginal product of labor. That is, they are paid more because they learn to be a more productive worker over time with gained experience.

Table 1. 2001 GED Test Cohort, Average Annual Earnings by Age and Score Groups of Working Individuals

Age Cohort At Time Of Test	GED Test Score Grouping	2001	2002	2003	2004	2005	2006	2007
16-19	< 450	\$4,904	\$7,090	\$7,928	\$11,449	\$13,347	\$16,047	\$15,846
	450 – 549	5,115	6,995	8,716	10,873	13,839	16,084	18,256
	550 +	5,842	8,049	9,413	10,929	12,828	15,773	18,282
20-24	< 450	8,083	9,869	10,027	11,718	13,616	15,414	16,604
	450 – 549	9,422	10,904	12,356	13,724	15,891	18,123	20,127
	550 +	10,998	12,467	13,570	15,557	17,692	20,194	22,550
25-34	< 450	8,381	10,466	11,044	13,016	13,225	15,707	18,318
	450 – 549	11,902	13,308	14,857	15,985	17,361	19,902	21,007
	550 +	15,093	16,336	18,209	19,687	20,970	23,790	27,591
35-44	< 450	11,548	13,049	15,313	14,581	19,028	20,103	18,934
	450 – 549	13,529	14,378	15,779	17,652	19,073	21,543	22,551
	550 +	19,941	20,290	22,233	25,414	26,342	27,829	25,820
45+	< 450	12,473	17,193	16,657	19,459	21,953	23,415	22,166
	450 – 549	14,740	14,768	17,974	17,303	18,102	19,843	19,670
	550 +	12,595	12,969	12,642	13,032	16,731	19,203	24,767

Note: Author’s calculations based on wages reported to the state’s unemployment insurance system for individuals who took the GED test in Utah in 2001.

Source: Utah Department of Workforce Services.

There are a number of other reasons for why wages tend to move upwards with time. Perhaps most well known is the effect of inflation, which tends to pull wages up with time just to maintain workers’ purchasing power. Another prominent factor is the business cycle. During periods of rapid growth, wages—on average—tend to grow strongly as labor becomes scarce or labor allocation problems force employers to bid up the price of labor to retain their current workers and attract new ones. On the flipside,

when the economy sours employers face less pressure to raise wages and workers are more inclined to accept the status quo, or even pay cuts, to maintain their employment.

However, in terms of this particular analysis it is the performance of wages due to the attainment of the GED that is of paramount interest. Looking at Figure 1, it appears that individuals in the 16 to 19 year-old age cohort, irrespective of their score on the GED test, experienced very similar wage trajectories over the seven years between 2001 and 2007. This seems to contradict the wage outcomes predicted by at least one school of human capital thought. That school views the attainment of education credentials as a signaling mechanism that should lead to rather immediate changes in wages. In this case, the attainment of the GED for 16 to 19 year olds does not appear to lead to a noticeable change in wages from that of their peers who did not pass the test.

This pattern is replicated in several of the older age cohorts as well. In Figures 2 and 3, the wage profiles over time are very similar, though at these age cohorts the influence of the test score cohort becomes more pronounced. This result may lend some credence to the findings of Heckman and LaFontaine who suggested that it was latent cognitive ability that drove wage performance rather than the GED for this population. Thus, the higher wages of individuals who scored 550 or higher and who are between the ages of 25 and 34 (Figure 3) in 2001 are likely due to their inherent cognitive ability. As they have moved through the labor market and gained experience, they have marshaled this greater cognitive ability—embodied human capital—and realized greater returns in the form of higher wages. This gap grows with each age group as each group gains that much more time to add work experience.

With that said, there is also substantial evidence that many individuals who took the GED and had matched wages went on to enter post-secondary and higher education programs. As Table 2 shows, in the 2001 GED cohort, nearly every age and score division saw a near 50 percent enrollment rate into some kind of post-secondary education program in the state of Utah. Working individuals in the younger age groups, especially groups 16-19 and 20-24 that make up the bulk of the test population, who passed the GED appear to have entered post-secondary education at much higher rates than that of the GED population at large. This may be due in part to the natural tendency of individuals to enter post-secondary education at those ages. Individuals who pass the GED appear to enter two-year and four-year institutions at higher rates than those who do not pass the test, but are likewise employed (Table 4).

Table 2. 2001 GED Test Cohort, Working Individuals Entering Post-Secondary or Higher Education (1998-2008)

Age Cohort At Time Of Test	GED Test Score Grouping	% Who Entered Some Form of Post- Secondary or Higher Education
16-19	< 450	48%
	450 – 549	59%

	550 +	76%
20-24	< 450	48%
	450 – 549	57%
	550 +	67%
25-34	< 450	46%
	450 – 549	49%
	550 +	55%
35-44	< 450	50%
	450 – 549	49%
	550 +	42%
45+	< 450	40%
	450 – 549	47%
	550 +	50%

Note: Only includes individuals who had matching wages.

Source: Utah Department of Workforce Services, Utah State Office of Education.

Table 3. GED Test Cohort, Total Test Population, Individuals Entering Post-Secondary or Higher Education in Utah (1998-2008)

Year of Test	GED Pass Status	% Who Entered Some Form of Post-Secondary or Higher Education
2001	Non-Pass	42%
	Pass	54%
2002	Non-Pass	38%
	Pass	53%
2003	Non-Pass	34%
	Pass	52%
2004	Non-Pass	38%
	Pass	51%
2005	Non-Pass	34%
	Pass	48%
2006	Non-Pass	31%
	Pass	46%

Note: Total GED test population.

Source: Utah Department of Workforce Services, Utah State Office of Education.

Table 4. 2001 GED Test Cohort, Working Individuals Entering Post-Secondary or Higher Education in Utah (1998-2008)

GED Test Status	Total Post-Secondary or Higher Education	ATC	Two-Year	Four-Year
Non-Pass	398	290	144	44
Pass	3,588	1,793	2,016	732

Note: Parts will not sum to total. Total is the count of individuals who entered any kind of post-secondary education. ATC, two-year, and four-year are the counts of individuals who entered those levels of education, it is possible that an individual entered multiple levels of education over the 1998 to 2008 time period. Only includes individuals who had matching wages.

Source: Utah Department of Workforce Services, Utah State Office of Education.

However, it does not appear that either working individuals who passed or failed the GED remain in post-secondary or higher education for very long. As presented in Table 5, individuals who took and passed the GED in 2001 and went on to post-secondary or higher education in Utah, on average took only 3.63 semesters of classes between the fall of 1998 and the spring of 2008. That is, however, slightly higher than the 2.44 semester average of those individuals who failed to pass the test. Of individuals who passed and went on to attend a two-year institution in the state, the average attendance during the time period was 3.33 semesters, for four-year institutions it was 3.17 semesters. While two or three semesters may be enough to complete a certificate at an applied technology college (ATC) it isn't enough to gain a credential at a two- or four-year institution. Thus, these results appear to be largely in keeping with those of Heckman and LaFontaine (2006) who find that,

“From the NLSY data, we know that about 40% of the GEDs go on to college. However, only a small percentage finish two or four year schools. The GED opens doors to opportunities that are not realized. Overall, 3% of GEDs complete four year college; 5% complete an Associates degree at a two year college. Those who obtain vocational skills certificates do so at the same rates as high school dropouts.”

Table 5. 2001 GED Test Cohort, Mean Semesters Attended by Working Individuals at Utah Institutions of Post-Secondary and Higher Education (1998-2008)

GED Test Status	Total Post-Secondary or Higher Education	ATC	Two-Year	Four-Year
Non-Pass	2.44	2.08	2.03	1.68
Pass	3.63	2.23	3.33	3.17

Note: Total is the mean of all semesters of post-secondary and higher education attended between 1998 and 2008 in Utah. Mean semesters attended by education level (ATC, two-year, and four-year) apply only to those levels and individuals. Only includes individuals who had matching wages.

Source: Utah Department of Workforce Services, Utah State Office of Education.

While the Utah dataset does not contain complete data for post-secondary and higher education it appears safe to assume GED recipients in Utah are no more likely to finish than national statistics indicate. However, further research on this topic is surely warranted. The high level of entrance into post-secondary education is at least suggestive that working individuals, who obtain a GED, and those who obtain a GED to work, realize the value of gaining further education. This also seems to be in keeping with the GED Testing Service's own survey results for the reasons given for taking the GED. Roughly 58 percent of respondents gave an education reason for taking the test in Utah.³ Furthermore, it is in getting that next degree or certification that the GED likely shows its true economic value. Without successfully making that next step it doesn't appear that GED in itself significantly alters the wage performance of an individual.

There are a few important caveats to note in closing. In each test cohort the number of data points after the year of the test is taken declines. This happens for a number of reasons, for example: people move out of the state of Utah, people leave the labor force

³ GED Statistical Report 2006, ACE, pg 48.

to raise a child, etc. Since the sample shrinks as time moves forward the average annual figure becomes more and more sensitive to the individual figures it contains. This is especially concerning in the older age cohorts that contain fewer individuals to begin with—the GED test population is heavily skewed to the 16-19 and 20-24 age groups. Thus, the figures for the final years are less representative than they could or should be. Additionally, there were a large number of individuals in the sample whose attachment to the labor force was transient at best. Their presence in the sample serves to bias the wages of more solidly attached workers downward. On the other hand, this does represent the reality of the earnings experience of GED recipients as a whole so they have not been excluded from this study.

Conclusion

Economic theory and recent research is at odds on what the economic value of a GED should be. One school of human capital thought suggests that the attainment of a new education credential should translate into higher wages. In that view, obtaining a GED should translate into higher wage growth and potential. However, a number of researchers using different data sources have found that once they account for things such as cognitive ability or actual work experience, the wage bonus for the GED disappears from their estimates. This perceived incongruity between theory and observation is not necessarily a problem. It may be that employers do not perceive the GED to be equal to a high school diploma for any number of reasons that theory and the most sophisticated models can't account for.

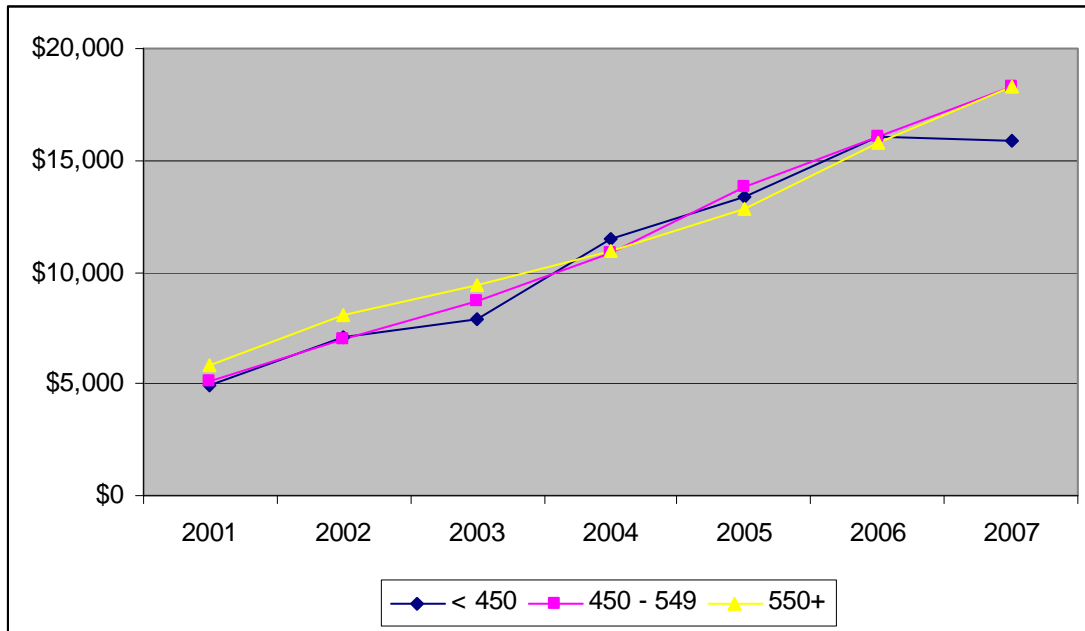
Data from Utah doesn't make this picture any clearer. In fact, because of the fundamental shortcomings of this analysis it is impossible to add much, if anything, to the ongoing national debate on the economic value of the GED. The data that the state does have is fragmentary in nature and does not allow for cause and effect relations to be defined. However, on a slightly more positive note, it may be possible to infer that inherent cognitive ability is indeed an important driver in wage performance thanks to this analysis.

In terms of public policy for Utah perhaps the most poignant issue that stands out from this analysis is that of entrance into post-secondary and higher education of those individuals who took the GED test (pass or fail). If the GED can be used to move an individual further along the spectrum of education and, or, skill development it will likely be a worthwhile investment. If its presence in a person's life is the catalyst that induces them to make that further investment it should be supported. That said, helping an individual get a GED and hoping that they take the next step and actually finishing further education without providing some level of support is likely a waste of resources given the expansive research that exists on the lack of economic returns to receiving only a GED.

References

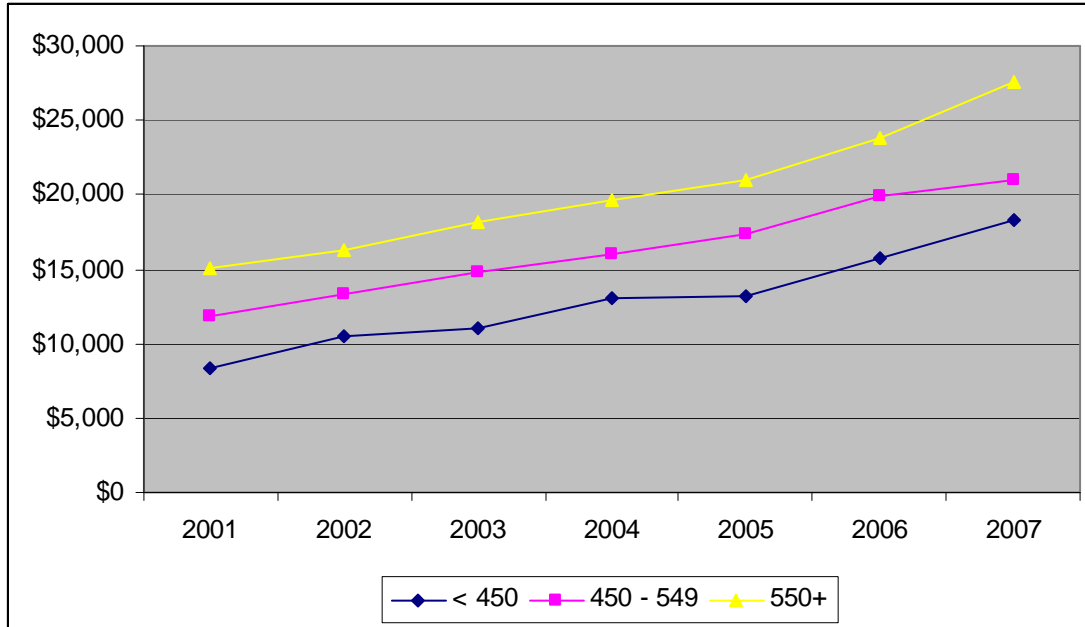
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- Heckman, J. J. and P. LaFontaine (2006). Bias-Corrected Estimated of GED Returns. *Journal of Labor Economics*, vol. 24(3), 661-700.

Figure 1. GED Test Cohort 2001, Individuals Ages 16-19 at time of Test



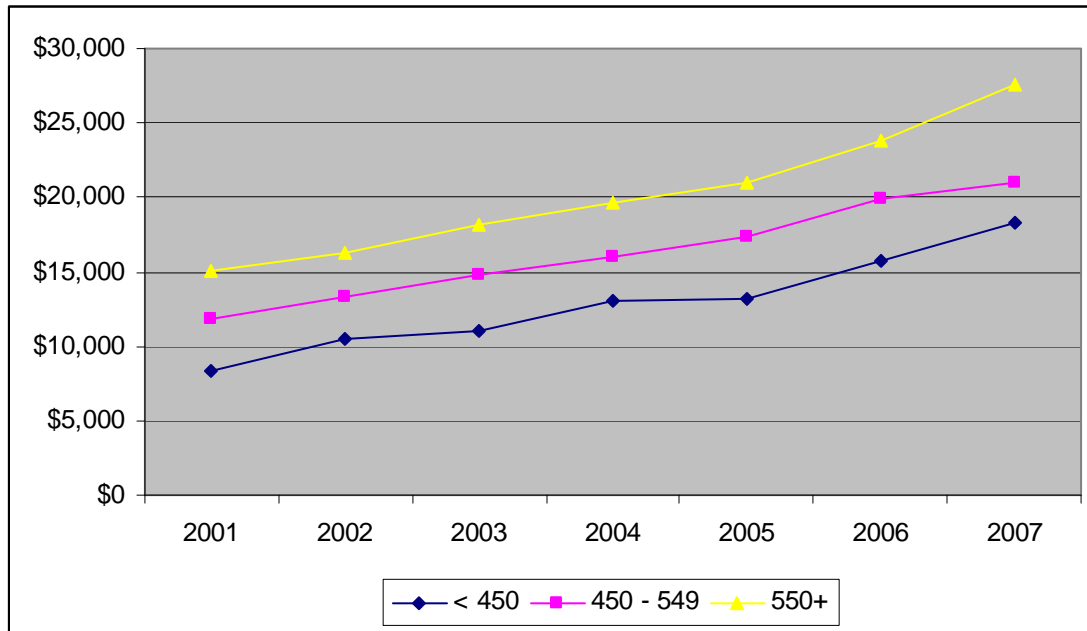
Source: Utah Department of Workforce Services.

Figure 2. GED Test Cohort 2001, Individuals Ages 20-24 at time of Test



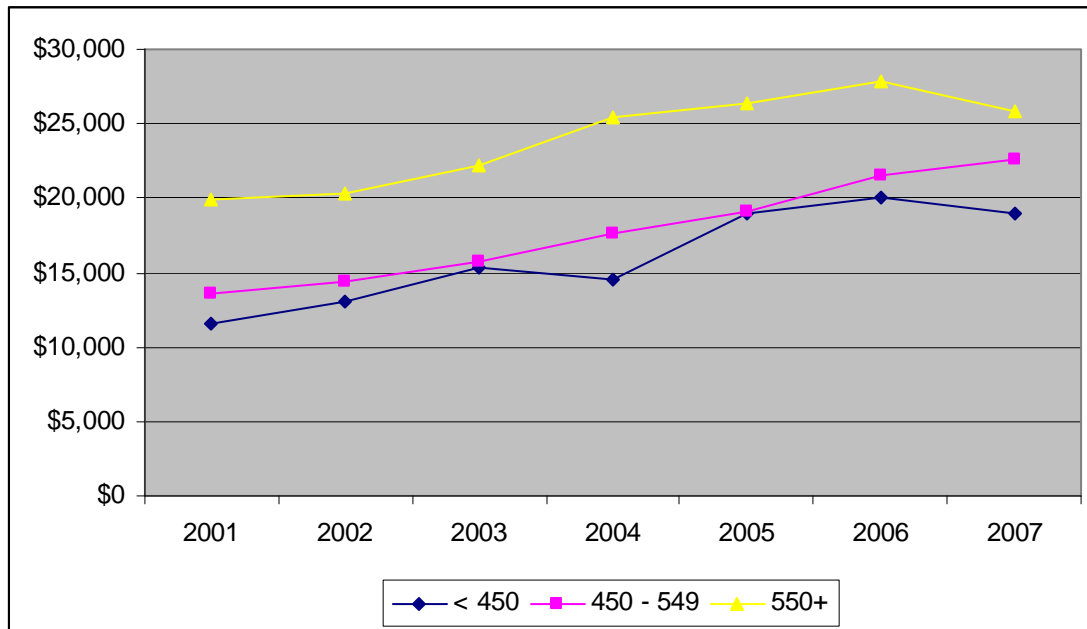
Source: Utah Department of Workforce Services.

Figure 3. GED Test Cohort 2001, Individuals Ages 25-34 at time of Test



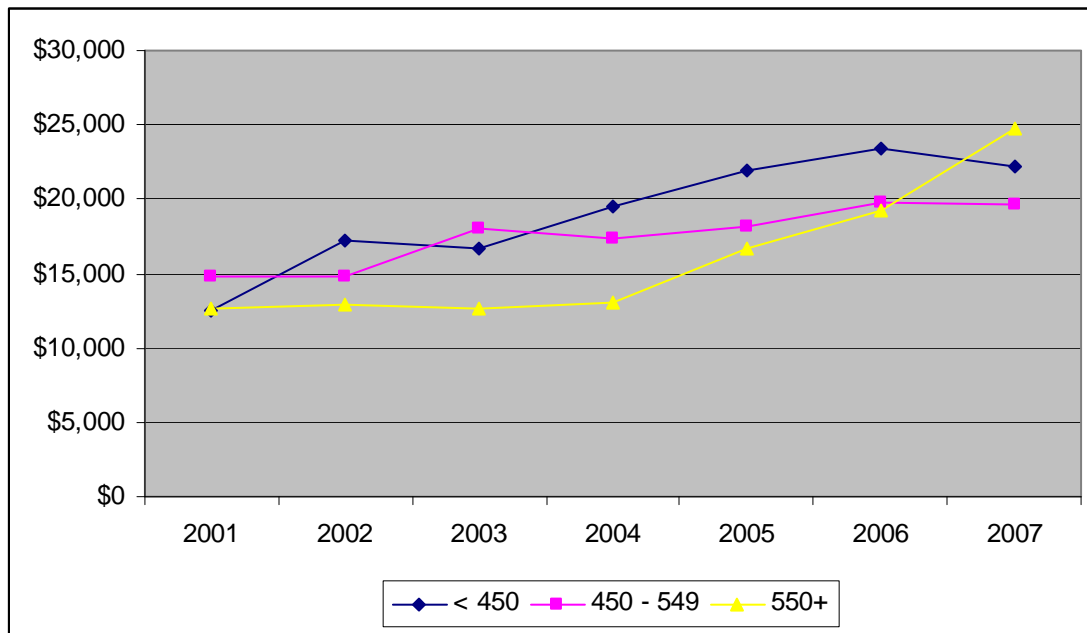
Source: Utah Department of Workforce Services.

Figure 4. GED Test Cohort 2001, Individuals Ages 35-44 at time of Test



Source: Utah Department of Workforce Services.

Figure 5. GED Test Cohort 2001, Individuals Ages 45 and Older at time of Test



Source: Utah Department of Workforce Services.